JPRS 80374

22 March 1982

USSR Report

TRANSPORTATION

No. 75

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MOTOR VEHICLE

LACK OF SPECIALIZED VEHICLES NOTED

Moscow ZA RULEM in Russian No 12, 1981 (signed to press 29 Oct 81) inside front cover and pp 1, 2

[Article by A. Chebotayev, candidate of technical sciences, associate at the Institute of Integrated Transportation Problems of USSR Gosplan: "Specialized Vehicles"]

[Excerpt] The presently existing structure of the truck fleet by types of bodies still does not entirely meet the requirements of certain economic sectors. The overall level of specialization of the truck fleet is just over 50 percent, but according to the evaluation of specialists at IKTP [Institute of Integrated Transportation Problems of USSR Gosplan] the optimal figure should be 70-80 percent.

The Ural-5557 agricultural dumptruck. The truck has all drive wheels and a bed that unloads on three sides.

The lack of specialized trucks causes (without considering other losses during hauling) losses of 1-1.5 percent of the grain harvest, 7-10 percent of beets, and 3-5 percent of the potatoes in agriculture, while in construction it causes a loss of up to five percent of commercial mortar and concrete. The lack of the necessary number of refrigerator trucks results in losses of 10-14 rubles per ton of perishable products shipped.

The document "Basic Directions of Economic and Social Development of the USSR in 1981-1985 and the Period Until 1990" states: "Expand the production of trucks with loading-unloading devices, container trucks with load capacities of 20 and 30 tons, refrigerator trucks, tanker trucks for petroleum products, trucks with load capacities of 9-13.5 tons for hauling livestock, poultry, live fish, and mixed liquid fertilizers, and truck stores and specialized vehicles to deliver consumer goods."

What is behind these lines? First of all, there is development of a typology of specialized motor vehicles for the long run. This integrated project was done by three scientific research institutions: IKTP, NAMI [Central Scientific Research Institute of Motor Vehicles and Motor Vehicle Engines], and NIIAT [State Scientific Research Institute of Motor Vehicle Transportation]. The results of this project were made the basis of further development of production and raising the technical level of specialized vehicles. The scope of a magazine article makes it impossible to tell about everything in detail, so we will deal here with the basic objectives of the 11th Five-Year Plan.

Dumptrucks

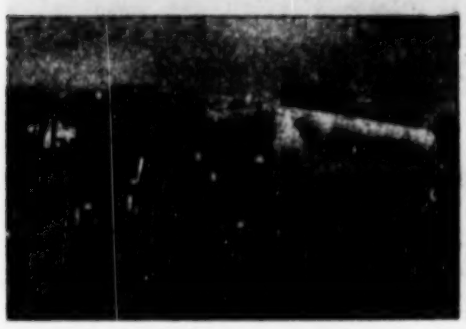
This is the most widespread variation of the specialized motor vehicle and practically precludes manual labor during unloading. Dumptrucks are used to haul bulk loads, which account for almost 70 perecent of total shipping volume and are steadily growing in absolute terms. Analysis shows, however, that there is no need for a significant increase in the production of dumptrucks. The problem must be solved by sharply increasing their load capacity and improving their all-terrain capability.

According to calculations, the average load capacity of the dumptruck fleet in the country must be gradually increased to 7-8 tons, and the proportion of them in the truck fleet should be raised to 25 percent. The most economical way to increase load capacity, and therefore one that deserves special attention, is reducing the weight of the vehicle itself by broad use of low-alloy steels and aluminum alloys (this refers to motor vehicles in general) and using high-pressure (up to 200 kilogram-force per square centimeter) hydraulic equipment.

In the 11th Five-Year Plan production of specialized, qualitatively new tractor-trailer dumptruck rigs for hauling agricultural products is to begin. These trucks are expected to play an important part in carrying out the food program outlined by the 26th Congress of the CPSU. Among other vehicles they include a rig with a 14-ton load capacity that uses a KamAZ-55102 dumptruck as the tractor unit (see ZA RULEM, No 11, 1981). Because some

The DS-41 bitumen truck, with a frameless design, figured for 7,000 liters of hot bitumen (tractor is a ZIL-130B1-76). Photo by A. Ganyushin.

MAZ-509A log truck with collapsible TMZ-803 trailer. The truck can haul 16 tons of timber. Photo by S. Maysterman (TASS).



MAZ-6422 tractor with double-axle milk semitrailer. The tank holds 19,000 liters. Photo by V. Knyazev.

Specialized SB-921 truck on KamAZ-5511 chassis. The truck mixes cement on the road and delivers it to the construction site. The volume of concrete mix that it carries is four cubic meters . Photo by V. Shirshov.

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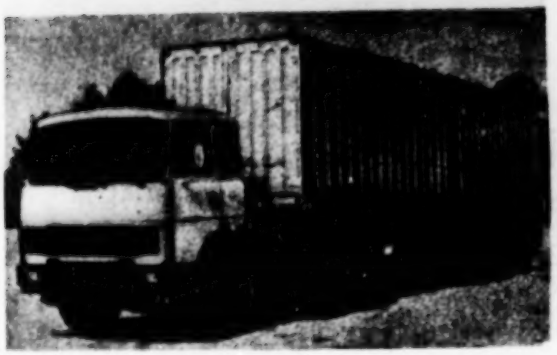
agricultural crops such as sugar beets and most potatoes are usually harvested in the wet autumn season, trucks and rigs with better all-terrain capability are needed to haul the harvest. Among the special agricultural units being prepared for production are a rig composed of a KAZ-4540 dumptruck-tractor with a load capacity of 5.5 tons and a trailer with the same load capacity, as well as a 7-tone Ural-5557 dumptruck-tractor with a trailer that holds 5.5-7 tons.

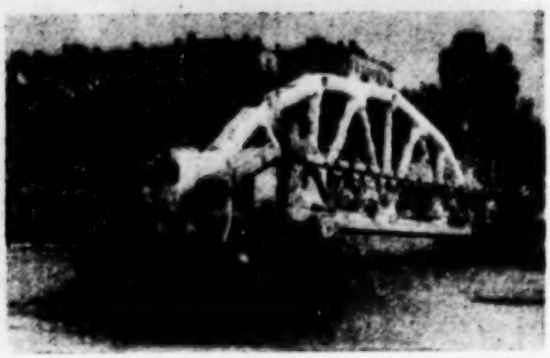
There will also be numerous changes in the production of dumptrucks for construction. In the 11th Five-Year Plan the Kremenchug plant will begin production of the new KrAZ-6505 truck with a load capacity of 16 tons. The Minsk plant is preparing for mass production of the improved 8-ton MAZ-5551 dumptruck. The Neftekamsk dumptruck plant is scheduled to update its well-known KamAZ-5511 and raise its load capacity to 11 tons (the KamAZ-55111).

Isothermic TA-943 van for perishable products.



Tractor-trailer rig for standardized containers: MAZ-6422 tractor with MAZ-9389 semitrailer.

BelAZ-7519 mining dumptruck with a load capacity of 110 tons. The truck has a 1,300 horsepower engine.



Tractor-trailer rig designed to haul a 24-meter reinforced concrete girder.

In addition, the needs of construction will be met by production of the SB-113 (capacity of 1.6 cubic meters on a ZIL-130 chassis), SB-124 (capacity of 4.5 cubic meters on a KamAZ-5511 chassis), and SB-128 (capacity of six cubic meters on a new KrAZ chassis) cement trucks at one of the plants of the Ministry of Construction, Road, and Municipal Machine Building in the city of Tuymazy, Bashkirskaya ASSR. Their tipping angle will reach almost 90 degrees, which will greatly improve the removal of the sticky load from the bed and eliminate the need for a followup manual operation.

Heavy-duty dumptrucks should find application in mining industry, including trucks that unload through the bed bottom: BelAZ-549 mine dumptrucks with a load capacity of 75 tons, BelAZ-7519 mine dumptrucks with a load capacity of 110 tons, and BelAZ-7420-9590 tractor-trailer rigs. The even more powerful BelAZ-7521 dumptruck with a load capacity of 180 tons is still under development.

Vans

Vans are the second most common type of specialized motor vehicle. They are used to ship packaged and unitary freight that needs to be protected against atmospheric influences (meat and dairy products, vegetables, fruit, and the like). Development of the production and use of these vehicles, like the production of trucks for agriculture, will help carry out the comprehensive food program.

Raising the well-being of Soviet people demands an improvement in rural and urban trade and services. The specific features of these sectors necessitate the use of different sizes of vans, including small ones, up to two tons. There must be vans for various purposes, with qualitatively new bodies that insure a high level of preservation of the products. For this reason, we must expand the production and use of improved isothermic, refrigerator, and heated bodies for perishable products and introduce new cooling sources (nitrogen, binary, and other types) and modern air conditioning.

The principal materials for vans should be aluminum alloys, plastics, and polyurethane foam used as insulation. In the future the beds of refrigerator trucks will be designed from standardized "sandwich-type" panels. The suspension systems of contemporary vans are to be significantly modernized by introducing shock absorbers in the suspension of the rear wheels, gradually replacing balance suspension with multispring suspension, and beginning the transition to the use of pneumatic suspension. Some of these specialized vehicles will be produced with lift gates and other hoisting equipment, which will raise the level of mechanization in loading and unloading.

Vans with medium load capacities based on the GAZ-52-01, GAZ-53A, and PAZ-672 are produced by the Gor'kiy specialized vehicle plants (models 891, 950, 3702, 3706, 3704, 3711, and 3712), the Caspian machine building plant (3705 and 3721), and the Shumerlya specialized vehicle plant (the 3716 model). In addition, the Baku specialized vehicle plant will begin production of refrigerator and isothermic bodies (models 3742 and 37421).

During the current five-year plan our objective is to switch, on a much greater scale than before, so-called short hauls from railroad transportation to motor vehicles, which means to develop direct (without reloading) intercity shipment to the customer's door. It is for precisely this purpose that the Krasnoyarsk vehicle trailer plant and the Odessa automotive assembly plant will begin production of modern large vans (20-25 tons). The refrigerator vans with load capacities of 22 tons whose production will be begun in Moldavia also belong to this vehicle group.

Overall, the proportion of vans in the truck fleet should rise to 25 percent.

Tanker Trucks

Tanker trucks and tractor-trailer rigs are used extensively for shipping liquid, powdered, and gaseous loads. They reduce losses to a minimum and

eliminate manual labor during loading and unloading, because the driver himself performs the duty of operator. The main suppliers of tankers are the enterprises in Grabov, Odessa, Posevnaya, Kaspiyskiy, Karlov, Dalmatov, Krasnogorsk, Slavyansk, and Arzamas. It is difficult today to imagine the distribution of petroleum products, milk supply to the cities, gas supply for home use, and firefighting service without the many different tankers built on truck chassis. Our task now is to raise their technical level substantially. This refers to switching to tanks with more progressive cross-sections, broad use of light alloys and aluminum alloys, and replacing single vehicles, which now predominate, with tractor-trailer rigs.

The incorporation of large-scale production of fuel tankers at the Neftekamsk dumptruck plant will make it possible to at least double the average load capacity of the fleet of these specialized vehicles. In addition, in time a number of enterprises will set up production of tanker semitrailers with volumes up to 50-60 cubic meters and load capacities of 14-27 tons for milk, powdered substances, alcohol, chemically active substances, wine, petroleum products, feed, liquefied cryogenic gases, water, and live fish. According to calculations tankers should rise to be 13-14 percent of the truck fleet. Of course, this will require that vehicle builders increase the production of ZIL, KamAZ, and MAZ tractors.

Container Trucks

In the new five-year plan there will be further expansion of container shipping, which has proved to be highly efficient. To accomplish this we need tractors, in combination with light specialized semitrailers with load capacities of 10-32 tons and loading heights lowered to 1,409 millimeters. Among them the 20-ton semitrailers for use on all roads, primarily in rural areas, and container trucks with self-contained reloading equipment should occupy a special place.

The complexity of coordinating transportation and reloading operations together with the prolonged process of accumulation or sale of loads, chiefly in agriculture, construction, and the sphere of housing and municipal services, dictates widespread use of detachable beds. The idea is extremely simple. The driver leaves the loaded bed without waiting for it to be unloaded, and drives off with another empty bed for a new load. In this way downtime can be sharply reduced regardless of the method of unloading and other conditions. There are two systems of such beds: with vertical reloading and with lengthwise unloading based on the unitary MAZ and KamAZ trucks. Systems of domestically produced removable beds on KamAZ-55113 chassis were tested during harvest time in Novosibirskaya Oblast.

Other Specialized Vehicles

Industrialization of housing, civil, and industrial construction has led to extensive use of wall and ceiling panels, room blocks, floor and ceiling slabs, beams, girders, and the like. To haul these articles we must organize modern industrial production of semitrailers with load capacities of 25-32 tons to carry panels, beams, slabs, blocks, girders, and other such articles.

The USSR is the world leader in timber reserves. Most of it is hauled to upper and lower yards by motor vehicles. To increase the productivity of this type of specialized transportation we must begin production of more powerful log truck tractors with improved all-terrain capabilities and double-axle and triple-axle collapsible trailers with total load capacities of up to 30 tons.

Motor vehicle carriers are also included among the specialized vehicles. Our industry produces more than 2 million vehicles a year. Interplant cooperation in truck production is developing, and each year hundreds of thousands of cars are sold to the public. Motor vehicle carriers are also necessary for centralized shipment of chassis to body building plants and for carrying cars to the stores. Only one model is produced today, the GKB-9950. But we must begin production of such vehicles designed specially for delivering truck chassis, small trucks, and cars, and these vehicles should be adapted to haul containers or other packaged and item freight in the other direction. This will make it possible to eliminate the unprofitable practice of driving vehicles to their destination and to organize a centralized service to deliver them nationwide.

A word must also be said about heavy-duty trailers with load capacities of 300 tons, such as the ChMZAP, and in the more remote future even larger ones with capacities of 600-1,000 tons. They are necessary to carry nuclear reactors, various types of metal design elements for chemical and power machine building, and very heavy outsized machines.

Improving the quality and structure of the truck fleet is inseparably bound up with organizing the production of specialized trailers on a contemporary machine building basis. At the present time trailers predominate in our country. But in view of our road conditions, prospective forms of shipping organizations, and other factors, according to calculations by IKTP it is necessary to increase the proportion of semitrailers in the truck fleet and in production to 50-55 percent. Moreover, we should now balance the production of tractors and semitrailers in a ratio of 100 to 150-200 (the current ratio is 100:100). This means that industry must produce 50-100 percent more semitrailers, mostly specialized.

The launching of the Krasnoyarsk and Stavropol' trailer plants and expansion of their production at the BelAvtoMAZ [Belorussian Automotive] Association and the Odessa, Kutaisi, and Voroshilovgrad plants will make it possible to meet the ever-growing needs of our economy for various types of trailers quite quickly.

Broad use of dumptrucks, vans, tankers, container trucks, and other specialized vehicles will make it possible to reduce labor expenditures during shipping by 25-30 percent and significantly improve the preservation of loads.

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11,176
CSO: 1829/119

MOTOR VEHICLE

GEORGIAN SCIENTISTS WORK TO DEVELOP FUEL-EFFICIENT ENGINES

[Editorial Report] Tbilisi KOMUNISTI in Georgian on 31 December 1981 page 2 carries a 900-word piece on efforts in the GSSR Academy of Sciences Machinery Engineering Institute to develop fuel-efficient engines. A cutoff device designed to lower fuel consumption when motors are idling is described. Tests in Tbilisi resulted in 5 to 10 percent savings, and Tbilisi's Agregat Experimental Plant (under the USSR Electrical Equipment Industry Ministry) is making a batch of 100 kits for the GSSR Automotive Transport Ministry. Another line of development involves motor designs in which compression ratios vary in accordance with load, so that in city traffic the compression is lower, and fuel is used more efficiently. The work of the Tskhinvali Elektrovibromash Plant, the only enterprise in the USSR working to develop motors producing less vibration and noise, is also discussed.

6854
CSO: 1813/719

GEORGIAN RAIL CAR IDLENESS, TRACK CONDITIONS PROBED

[Editorial Report] Tbilisi KOMUNISTI in Georgian on 23 December 1981 page 2 under the regular full-page feature "The People's Watchful Eye" includes two items focusing on rail transport problems:

A 700-word item deals with the findings of the Georgian People's Control Committee with regard to the poor upkeep and maintenance of industrial railspurs belonging to various ministries and organizations, such as construction, construction materials, rural construction, food industry, trade, Tsekavshiri, Neftesnabsbyt, Sel'khozkhimiya, etc. Figures are given. Confusion as to funding, who is to be responsible for repairs and rebuilding, and so on is cited.

A 900-word item reports a KOMUNISTI raid in conjunction with local procurators, which revealed extensive "carelessness or irresponsibility" in the maintenance and unloading of railcars in the yards of the Samtredia Department of the Transcaucasian Railroad, which includes towns in Makharadze and Vani rayons and elsewhere in the vicinity. New sidings [tupiki] have been built, and others are to be built, but poor organization and negligence are the main factors (yards are clogged and tracks are obstructed with partly unloaded freight and heaps of materials, for example), and the imposition of heavy fines has no effect--"it's not coming out of their pockets, after all."

6854
CSO: 1813/718

NEW ACCOUNTING PROCEDURES DESCRIBED BY RAILWAYS MINISTRY OFFICIAL

Moscow ZHELEZNODOROZHNYY TRANSPORT in Russian No 9, 1981 (signed to press 8 Sep 81) pp 55-58

[Article by K. Kh. Salatov, deputy chief of the Main Economic Planning Administration of MPS [Ministry of Railways]: "Conversion of the Transport Plants to a Normative Net Output Indicator"]

[Text] The CPSU Central Committee and USSR Council of Ministers decree on "Improvements of the planning and strengthening of the impact of the administrative mechanism in stepping up production efficiency and work quality" calls for the putting into practice of a socialist economic indicator of net (normative) output.

The MPS is now working to convert the industrial railroad transport enterprises beginning in 1982 to the planning of production activity on the basis of this indicator. It should be borne in mind that such a change in the industrial railroad transport enterprises requires the preparation and development of specific conditions. This is due to the fact that the character of the output produced by them is not of a uniform character and in the total production volume the preponderant part is handled by the repair enterprises. Their share comprises more than 70 percent of the output produced by the MPS plants and the overwhelming proportion of this is repair of rolling stock, various track facilities, and machines, mechanisms and equipment.

The railroad transport industry is not an individual sector in the way that, for example, heavy and transport machine building, power machine building, the electrical engineering industry and other sectors are. But the volumes and quantity of the output items produced and material resources consumed are quite large. Thus, just the plants for repair of rolling stock and production of spare parts and automation, signalization and communications facilities consume yearly more than 1.5 million tons of rolled ferrous metals, 0.5 million cubic meters of lumber, 16,000 kilometers of adjusting wire, more than 2 million bearings, and about 500,000 tons of cast iron. The rail treatment plants process more than 1.6 tons of rails and the ballast plants procure about 50 million cubic meters of ballast materials. Despite this, the railroad transport industry fulfills the role of an auxiliary organization for the railroads since it provides for their requirements for specific transport products which are needed for the normal operation of the transport process.

Under the current conditions of intensive operation of the railroads the railroad transport industry is faced with the especially urgent tasks not only of carrying out the assignments for the indicators of production volume but also fulfillment of production of the items of the entire products list prescribed by the production plan. All this requires rejection of the old evaluation criteria and the necessity for conversion to the new net output indicator because the enterprises' new conditions of economic activity provide for increased effectiveness of their operation and the achievement of high levels of final national economic results.

A matter of definite interest is analysis of the evolving system of planning of the financial and economic activity of the MPS plants.

At the present time evaluation of the level of work of the enterprise is usually based on a determination of the percentage of fulfillment of the plan and the rates of growth achieved in respect to the main indicators. The total volume of fulfillment has been set as the chief indicator for production and economic activity. In combination with the other basic indicators (balance-sheet profit, labor productivity, wage fund, and several others) this indicator is determinative in evaluating the results of financial and economic activity, collating the outcomes in socialist competition, and providing normal and material incentives for the labor collectives.

However, there are important deficiencies in this measuring stick for the economic activity. The trouble is the enterprises often strive for a maximum increase in the volume of production of output requiring the least labor input and they do not look for ways to promote fulfillment of the assignments for the prescribed products list. This becomes especially apparent in the repair of rolling stock, which involves a large volume of reconditioning work, modernization of locomotives and cars, and manufacture of intricate spare parts, where there is no highly labor-intensive work and negligible material input.

There are instances where some enterprises overfulfill the plans with respect to the cost indicators and also achieve a substantial growth of the volume of (gross) production goods but do not fulfill the plans with respect to the prescribed products list and assortment. At the same time, there is a considerable growth in the volume of so-called other work not stipulated by the plan but counted in the volume of sales and included in the (gross) production and output sold along with the cost of the customer's raw material and materials. In this system the enterprise is to a certain extent able to regulate the financial and economic indicators and to create conditions suitable for fulfillment of the assignments as per the indicators in effect, for control of the wage fund expenditures, etc.

It should be noted that for the railroad transport plants the effect of past labor does not play a particularly large role in putting products into production because they are not directly faced with the problem of diversifying output. This is due to the fact that these plants are not developers of designs and their basic task is the maintenance of the fixed capital of railroad transport in an efficient operating condition and, as we know, the repair is carried out in accordance with the repair regulations and the approved norms for expenditure of material resources.

At the same time it is because of this circumstance that the interests of the plants do not coincide in a number of instances with those of railroad transport.

This applies primarily to the fulfillment by the plants of the plans for the products list in the assigned assortment. Nevertheless, though they have not fulfilled the plan for assortment, the enterprises count the assets in the economic incentive funds. For example, in the plants' production plans the products list is usually established in a definite quantity by types and series. The goods production volume is calculated by the plants on the basis of the products list and the wholesale prices.

When it fulfills the plan for products list and assigned assortment and quantity, the enterprise also fulfills the plan in value terms. In this case the interests of the plants and the railroads coincide. But for various objective and nonobjective reasons, the enterprise cannot fulfill the assignment for assortment i.e. it may not fulfill it for one product list and at the same time overfulfill it by the same amount for another product list. Such cases are rather common for plants for repair of rolling stock and production of spare parts, STsB [signalization, centralization and blocking] and communications items, etc.

For example, the passenger car plan for periodic 4-5 year repair is not being fulfilled and at the same time the yearly plan for periodic repair is being overfulfilled by this amount or the plan for capital repair of locomotives is not being fulfilled and the one for medium repair is being overfulfilled, etc. In these cases nonfulfillment of the assignment for assortment is to all intents and purposes not reflected in the cost indicator.

Thus, after fulfilling the plan for products list and cost indicators, the enterprise can set up incentive funds in full volume despite nonfulfillment of the assignment for assortment. Also, the factor of reduction for nonfulfillment of deliveries as per the contracts have a virtually negligible effect on the size of these funds.

Let us examine the potential for such regulation with an electric locomotive plant as an illustration. In the plan estimate the cost of a set of electric machines is usually calculated as an average for the plant for a particular locomotive series as per the approved norms of interchangeability (Table 1). The actual volumes of repair and consequently also the cost can be regulated through the repair resources and technological reserve available in the plant.

The wholesale prices for repair of a locomotive and electric machines are established separately. This is because the units of the traction motors (armature and body) are under separate responsibility and the body-armature combinations may have different volumes of repair; this virtually precludes the approval of a single wholesale price for the locomotive as a whole.

The establishment of an indicator of (gross) product output is dependent not only on the expenditures of living labor but also those of past labor. Hence the enterprises are unwilling to undertake replacements in the assortment because new products, even improved ones, require an increase of labor input.

In machine building they usually prefer output with a large proportion of physical input rather than an increase in the production of more labor-intensive output. In this case the introduction of an indicator of net production takes into account

Table 1

Indicators		Estimate for Planned Set: Traction Motor NB-406	Estimate for Planned Set: Motor Compressor NB-431	Estimate for Planned Set: Motor Generator NB-429	Actually Determined: Traction Motor NB-406	Actually Determined: Motor Compressor NB-431	Actually Determined: Motor Generator NB-429
Capital Repair of Body	Number of Units	4	1	1	6	1	1
	Wholesale Price, rubles	1,163	197	459	1,163	197	459
	Amount, rubles	4,652	197	459	6,978	197	459
Medium Repair	Number of Units	4	1	1	2	1	1
	Wholesale Price, rubles	395	84	270	395	84	270
	Amount, rubles	1,580	84	270	790	84	270
Total for Body		6,232	281	729	7,768	281	729
Capital Repair of Armature	Number of Units	4	1	1	5	1	1
	Wholesale Price, rubles	2,355	461	738	2,355	461	738
	Amount, rubles	9,420	461	738	11,775	461	738
Medium Repair	Number of Units	4	1	1	3	1	1
	Wholesale Price, rubles	170	46	94	170	46	94
	Amount, rubles	680	46	94	510	46	94
Total for Armature		10,100	507	832	12,285	507	832
In All for the Set		16,332	788	1,561	20,053	788	1,561
TOTAL		-	18,681	-	-	22,402	-

the growth of labor input, a fact which creates definite incentives for the production of more progressive equipment. For repair work in which the physical input (raw material, materials, purchased component parts and semimanufactures, fuel, energy) comprises as a whole about 65 percent of the cost of production and wages about 11 percent, it would seem that this circumstance should have fundamental significance but, as we noted, it is not decisive. It is apparent from the examples that the labor intensiveness of the output produced has very great importance. It also largely predetermines the tendency of the plants to fulfill and overfulfill the products list as a whole but not in the assigned assortment.

Our feeling is that the introduction of an indicator of net (normative) output for the railroad transport industrial enterprises should have a positive effect on the work of the enterprises. This indicator enables them to increase the proportion of production of relatively labor-intensive products. Also, a higher level of fulfillment of the plans (vis-a-vis the net output indicator) can be achieved by increasing the production of items with a relative labor intensiveness above the average for the enterprise.

In the example cited when the plan for products list is not fulfilled, the enterprise, by regulating the cost of a set of electrical machines, is able to fulfill the assignment for commodity production and this creates the prerequisite for fulfillment of the assignments for growth of labor productivity, for profit and for other indicators.

The commodity production indicator does not fully reflect the volume of work and consequently cannot serve as a basis for an objective evaluation of the labor indicators, the output-capital ratio, etc. At the same time, the indicator for normative net output, as a product of the living labor of the workers, enables us to determine with more accuracy the extent of the enterprises' own work and becomes a basis for establishing the level of labor productivity, the necessary wage fund, and the output-capital ratio. However, in planning it is desirable that this indicator be used in combination with the indicator of commodity output to be sold.

It should be noted that the procedure for determining comparable norms of net output is similar to that for setting comparable wholesale prices, namely computing the volume of the norm of net output on the basis of all the component items which comprise the volume of industrial output--finished products and semimanufactures earmarked for release to other organizations, work of an industrial character, etc.

In all the enterprises they have now completed the work of reviewing the wholesale prices for the output of the railroad transport plants. The price lists of wholesale prices for the output of the industrial enterprises stipulate the net output norms.

In the conversion of the plants to an indicator for normative net output it is especially necessary to focus attention on the following circumstances. The instructions on planning, recording and calculating the production costs for the industrial enterprises of the Ministry of Railways and the repair plants allow, by way of an exception, the use of a source of expenditures for semimanufactures of their own production. However, this requires an especially careful breakdown

of the accounting amount of over-all expenditures for the semimanufactures of their own production as per the computation items. Otherwise, in the compilation of normative net output the factor of wages for production workers which is included in this item may introduce substantial discrepancies.

The net output norm comprises a part of the wholesale price for the product (job) which includes wages and deductions for social insurance and profit, i.e. the factors pertaining to the labor input of the collective evaluated on the basis of the norm. It must also be borne in mind that the calculations for the net output norms are based on the average industry costs. These do not contain the labor input of other collectives, which in the computations for the product are reflected in the form of cost of materials, semimanufactures and component products as well as wear and tear on fixed capital, etc.

The norm of net output for a product (job) is calculated according to the formula $N = (Z_o + Z_d)\ Ks\ (1 + K_z) + P_N$ where Zo indicates the basic wages of the production workers; Z_d supplementary wages of the production workers; Ks the coefficient of withholdings for social insurance: $Ks = 1 + a_s/100$; ac_s the industry norm for withholdings for social insurance in percentage of wages; K_z the coefficient which reflects the relationship between the wages of the industrial production personnel engaged in servicing and supervision of production and the wages of the production workers of the enterprises; and P_N the normative profit received for determination of the wholesale price.

Thus, the accurate accounting and careful breakdown of the expenditures for semimanufactures of their own production are matters of fundamental importance.

Another essential characteristic of the use of a norm of net output is the fact that it includes the profit which is considered in substantiating and establishing the price. The profit is computed so as to provide for the appropriate mutual settlements with the budget and for the withholdings for the economic incentive funds i.e. all the normally operating enterprises must be provided with the conditions for further improvement of the cost accounting activity in the form of increased production activity and fulfillment of the plans for the diversity of the output produced.

The first component of the necessary profit is obtained from the amount of the payment for fixed production capital and the normalized working capital or as the product of the amount of the average yearly cost of the fixed production capital and the normalized working capital and the norms of payment in the amount of 6 percent of their cost. The data is gotten from the yearly accounting office report. Then there are included in the profit the amounts needed for the establishment of the economic incentive funds, the liquidation of the bank credit, the financial losses in the housing and municipal services, and the amounts for the growth of the normalized working capital.

In the preparation of the profitability norm there must not be an extremely high and an unjustifiably low profitability for some of the types of output.

To substantiate the new wholesale prices and the norms of net output we take a single base--the industry production cost for output as per the plan for the planned year. As reference materials we use the report and planning computations for the preceding 1-2 years. It must be borne in mind that the wholesale prices and norms of net output are usually determined from the average production cost and the calculations for each product taken separately. Also, the norms of profitability for the calculation of the wholesale prices and the net output norms are compiled according to the types of output by the price fixing organs and approved by the MPS in coordination with the State Committee for Prices.

For the distribution of the profit for the various types of output we are establishing an accounting norm of profit on the production cost with deduction for the cost of materials, fuel, energy, semimanufactures and component products. The amount of the profit for these types of output is determined as a proportion of the requisite profit for the commodity production as a whole with allowance for obtaining the correct relationships between the prices, the characteristics of the economic turnover of output within the industry, the structure and turnover of the production capital of the various enterprises, and the incentives for increasing production of various types of output and stepping up its quality.

Table 2

Type of Production	Profitability, %, on Production Cost less Physical Input
Repair and modernization of railroad rolling stock, track machines and other production	27.0
Making and repair of wheel pairs for railroad rolling stock	27.0
Spare parts for:	
Electric rolling stock and contact net components	58.0
Diesel locomotives, diesel trains, motor trolleys and railcars	58.0
Freight and passenger cars, refrigerator trains and containers	58.0
Brake products for railroad rolling stock	58.0
Machines, mechanisms and railroad equipment	58.0
Apparatus for STs Band communications	58.0
Apparatus:	
Electric for electric rolling stock	27.0

Table 2 (Continued)

Type of Production	Profitability, %, on Production Cost less Physical Input
Diesel locomotives, diesel trains	
STsB and communications	28.0
Switching products	38.0

In accordance with the methods directives on the procedure for reviewing the prices in industry, the Ministry of Railways approved norms of profitability for the most important groups of industrial products for purposes of determination of the amount of the profit in the preparation of the wholesale prices and net output norms to be introduced effective 1 January 1982 (Figure 2). For spare parts there was established an incentive profitability norm double that of the other types of output of the railroad transport plants. This was done as motivation for the enterprises to increase the production of output in short supply for the railroads and to step up its quality.

By using the approved norm for profitability we can compute the normative profit (P_N) for a specific product. For example, if the planned cost of production of an item (job) is 2,850 rubles including the cost of raw material and materials counting 390 rubles for transport and procurement expenses; the purchased semimanufactures and component products (also counting the transport and procurement expenses) and the services of the cooperative enterprises amount to 960 rubles; the costs for fuel and energy for technological purposes come to 90 rubles; the recurrent wastes (subtracted)--10 rubles; and the approved norm of profitability is 28 percent, then

$$P_N = 2850 - \frac{(390 + 960 + 90 - 10)}{100} 28 = 397 \text{ rubles}$$

The net output norm must be worked out and approved for the entire list of finished products; semimanufactures and products supplied on a cooperative basis; all the types of repair of rolling stock and other equipment for the railroads and their modernization; additional work carried out as per the MPS directives in repair of rolling stock (in cases where the pertinent directive calls for payment of the cost of the additional work over and above the wholesale price for the repair); all the services and work of an industrial nature sold to others for its own capital construction and to nonindustrial organizations of its own enterprise; capital and medium repair of the equipment and transport facilities; rates for energy of its own production released to other organizations and supplementary payments (discounts) on the wholesale prices for a design change; markups for export disposal of products and for all the other work included in the commodity output.

It should be borne in mind that with the same production cost and a single price for final product at various enterprises their own costs can be drastically different because of a different degree of cooperation. In the enterprises with a high degree of cooperation their costs will be lower and their physical input (by virtue of purchased semimanufactures) greater than at enterprises with a lesser degree of cooperation.

Table 3

Items	Plants: Moscow Locomotive Repair	Plants: Sverdlovsk Electric Locomotive Repair	Variations
Purchased semimanufactures and services of the cooperative enterprises, rubles	3,982	4,743	-761
Basic and supplementary wages, rubles	3,994	3,509	+482
Cost of repair under comparable conditions, rubles	13,430	13,582	-152
Profitability on the production cost, percentage	+32.4	+31.0	+1.4

Table 3 shows the comparative costs for medium repair of a VL8 electric locomotive without electric machines and with a varying level of cooperation. As is apparent, there is practically no difference in the production cost. Consequently when there is a single price for such products, the methodological directives for the preparation of net output norms authorize differentiated norms both for the groups of enterprises and for the individual enterprises within the average industry norm. This need may also arise in using a normative net output if the cooperation terms undergo substantial changes after the norms are approved. This statute makes all the enterprises subject to approximately equal terms.

In line with this statute the economic validity and truthfulness of the materials submitted for approval of net output norms depends on the executives of the enterprises and the workers of the planning and economic services who have been tasked with the strictest responsibility for the quality of the substantiation of the net output norms and the correctness of the procedures for approving them.

After the approval of the wholesale price list and the net output norms we have to do a great deal of work to incorporate additions in the methods of compiling the technical-industrial-financial plan in light of the need to coordinate the net output indicators with the other sections of the plan. To a certain extent this requires preparation for performing the accounting and reporting of the enterprises in accordance with the new indicators.

The introduction of a net output indicator requires the enterprises to do a great deal of organizational work. It is also important to bear in mind that this indicator will operate in full interrelationship with the other evaluation indicators (cost, physical) which describe the work of the enterprises. It is necessary in this regard to establish economic control from the very beginning so as to bring to light the positive and negative aspects of the interaction of all the indicators.

It is especially important before the end of the year to complete the recalculation of the planning indicators which stem from the use of net output norms. It is also necessary to bear in mind the fact that in the preparation of the new lists of wholesale prices and net output norms a certain portion of the output of the industrial enterprises did not get into the lists of wholesale prices and these norms because of the lack of normative and technical data. Consequently the validity of the planning assignments based on the new indicators depends on the rapidity and accuracy of the accomplishment of the preparation of the wholesale prices and net output norms. At the same time, the appropriate main administrations must on an operational basis compute and approve for the enterprises relative stable normative coefficients which will be used for recomputing output in the new indicators and for which it is not possible to establish a norm of net output.

7962
CSO: 1829/73

RSFSR MINISTRY OF RIVER FLEET ALLOWS EXCESS NATURAL LOSSES OF COAL

Moscow EKONOMICHESKAYA GAZETA in Russian No 4, Jan 82 p 13

[Article by F. Zelenkov, candidate of technical sciences, sector chief at the Scientific Research Institute of Economics and Material-Technical Supply: "Unnatural Loss"]

[Text] A question for the RSFSR Ministry of the River Fleet: Where does the coal disappear to during river shipments?

Let us begin with a concrete example. According to the administration of the Southern River Port in Moscow, in the last five years coal losses during transshipment from ships to railroad transportation in full conformity with norms of natural loss existing in the Ministry of the River Fleet were 60,000 tons.

Let us try to visualize this amount. Calculations show that it could form a pile 500 meters in length and 100 meters across at the base. This pile could cross the Moscow River in the port region. If we assumed that the coal fell into the river only in the space between the ship and the wall of the dock (this space is 0.5 meters wide and 300 meters long in the river five meters deep), the pile of coal in this case would be more than 1.5 kilometers high.

Because nothing of the sort is observed in the port region, we can say that although there is no coal mountain there is a very important question, the question of norms of natural loss of coal and other so-called bulk cargoes during transportation in vessels of the river fleet.

The volume of bulk cargo shipping by water transportation reaches many tens of millions of tons. Each year more than 20 million tons of hard coal is shipped, for example. As a rule the cargo is transshipped once or twice.

The norms of natural loss of hard coal during transportation by ships of the fleet were established by the RSFSR Ministry of the River Fleet in 1972. They take into account losses for transshipping from railroad transportation to river vessels and back and losses during transportation by the ships.

The total norms of natural loss reach 2.3 percent, which makes it possible each year to write off more than 460,000 tons of coal worth about 5 million rubles as natural loss.

If we compare the amounts of existing norms of natural loss of hard coal during shipment by vessels of the river fleet and by railroad transportation, the results of the comparison are somewhat unexpected. The norm used for all coal transported in vessels of the river fleet is 2.4 times greater than the norms applied for shipping high-grade coals for distances up to 1,000 kilometers by railroad transportation.

The principal reasons for losses of coal during shipping in railroad cars are leakage of coal through cracks in the bodies of the cars and coal being blown away by streams of air at speeds of more than 50 kilometers an hour. But these factors are not present when coal is shipped in river vessels. There are no cracks in the hulls and holds of the ships, and they do not travel fast. Coal left in the hold after unloading by a crane is cleaned out by a special machine.

Let us go on. Present norms for natural loss for transshipment from rail to water transportation and back are almost twice the size of the norms used by the Ministry of Railroads. The example given above illustrates the discrepancy between these norms.

At the present time the national economy has all-Union norms for loss of fuel output during storage, storage operations, and shipping from one storage facility to another. These norms were ratified by an August 1981 decree of USSR Gossnab. But the present norms of the RSFSR Ministry of the River Fleet, for operations that are similar to those envisioned by the all-Union norms, are almost three times higher, and 3.5 times higher considering possible storage of coal in port facilities.

What does this lead to? Here is a quotation from an official letter received by NIIMS [Scientific Research Institute of Economics and Material-Technical Supply] from the Soyuztekhenergo [USSR Energy Technology] Association. "As the result of using the existing norms for natural loss during shipping by river transportation the Southern Port in Moscow writes off 40,000-50,000 tons of coal a year at the expense of Mosenergo [Moscow Power System]."

This is just one example. Application of the all-Union norms for natural loss of coal to the RSFSR Ministry of the River Fleet would make it possible to prevent 250,000 tons of coal a year from being written off.

11,176
CSO: 1829/140

LACK OF UNIFORM LOADING SPECIFICATIONS HINDERS PORT-RAILROAD COOPERATION

Moscow EKONOMICHESKAYA GAZETA in Russian No 49, Dec 81 p 18

[Article by V. Fomchenko, deputy chief of the commercial seaport of Kaliningrad, and G. Sol'shteyn, journalist: "What Is Preventing Smooth Cooperation by the Port and the Railroad?"]

[Text] The Kaliningrad commercial seaport received telegrams from many enterprises asking the same question: Why is the delivery of metal products being held up? At mid-year some 40,000 tons of rolled metal products had accumulated in the port.

What caused this situation? There are not enough railroad cars for shipping. Ships have to be unloaded directly onto the docks and the metal must be kept there for months awaiting transshipment to the railroad. This has a negative effect both on preservation of the cargo and on the organization of work in the port.

But the port workers are not accustomed to simply waiting for the cars to appear. This is especially true when the party congress posed the challenges of introducing more streamlined shipping technology in mixed communication and implementation of steps to reduce the time required to deliver cargo. This means that each enterprise that uses the services of the railroad must make full use of the load capacity of the cars and speed up their processing as much as possible.

The port workers of Kaliningrad are ready to fulfill these conditions. Unfortunately, a lack of mutual understanding with the railroad workers is preventing them from speeding up processing and increasing the loading of the cars. The technical specifications for loading and securing loads ratified by the Ministry of Railroads do not have a uniform centralized scheme for securing rolled steel and large-diameter pipe when they are loaded in conventional cars and on flatcars. So seaports in Kaliningrad and other parts of the country have to use local technical specifications devised, each according to its own, by the rail sections.

Let us give a few examples from the practical experience of the Kaliningrad commercial seaport. It takes 1.2-2.3 cubic meters of wooden beams and up to 1,100 200-millimeter nails, which hold the beam to the floor of the flatcar, as well as one-fourth of a ton of wire to load one flatcar with rolled steel (a roll of steel weighs 9-16 tons). The consumption of materials for packing is much higher than in other ports.

Kaliningrad port workers load only nine 720-millimeter metal pipes in a gondola car, whereas other ports load 17. The static load on one car is almost 50 percent less in this case. But all attempts by the Kaliningrad workers to employ a more efficient system have unfortunately failed. The local railroad workers have their own method. The Ministry of the Maritime Fleet cannot give them orders, and the Ministry of Railroads refuses to participate in the problem.

Here is what this leads to. With an annual processing volume of up to 500,000 tons of rolled steel and pipe the Kaliningrad port workers use about 5,000 cubic meters of sawtimber, 1,200 tons of cable, and up to 400 tons of nails each year to secure these loads. Expenditures for loading materials reach 300,000 rubles a year. And this is without considering the fact that they reuse wooden materials that come into the port on the ships with the load.

The seaports served by the Odessa and Moldavian railroads work on a different, simplified system. They load the very same metal pipe into identical cars, without panels and spacers, thus using the capacity of the cars much more fully. Cars loaded with pipe in this manner arrive in the port of Kaliningrad from the Southern Urals Railroad.

The sectorial newspaper VODNYY TRANSPORT has published several critical articles on the question of introducing pipe loading by new systems on all railroads that serve seaports. It gave a detailed description of the experience of dock workers at the Reni commercial seaport who, cooperating with employees of administrations of the Odessa and Moldavian railroads,worked out and introduced new schemes for denser loading of large-diameter pipe in gondola cars without wooden end panels and spacers. The static load on each car was increased by an average of 4.9 tons by using this kind of "cap"; the port of Reni shipped 322,000 tons of pipe by this system, freeing 3,500 railroad cars which carried an additional 227,500 tons of national economic cargo. Seemingly, these "caps"are needed everywhere. But this valuable know-how has not spread beyond the Odessa and Moldavian roads.

In the Far East four ports are engaged in moving large-diameter pipe from the sea to the railroad. These are the ports of Vanino, Vladivostok, Nakhodka, and Vostochnyy. Given the existing practices of the Ministry of Railroads with respect to loading and securing loads, the technical specifications and calculations are worked out by the transshipment ports and ratified in the Komsomol'sk-na-Amure section for Vanino, and in the Vladivostok section of the Far Eastern Railroad for the other three. This kind of procedure gave rise to many different methods of securing pipes both on flatcars and in gondolas. The expenditures of materials to secure the load are much too great, especially wire, timber , and nails. Each section tries to protect itself against accidents. As a result thousands of cubic meters of timber are transferred to firewood and hundreds of tons of wire are converted to scrap metal. On the Far Eastern Railroad alone the four seaports ship pipe using two loading and securing systems for gondolas and three systems for flatcars.

The proposal of the port of Vanino is entirely sound. They propose that the appropriate division of Soyuzmorniiproyekt [State Planning, Design and Scientific Research Institute of Maritime Transportation] be given an urgent assignment to study systems existing in the country for loading and securing large-diameter

pipe when it is loaded into gondola cars and flatcars in the ports, working out all-Union technical specifications, and having them ratified by the Ministry of Railroads. Unfortunately, however, this suggestion is up in the air at the present time.

In our opinion, it is time to straighten out this important business. The Ministry of Railroads must finally reject its narrowly departmental approach and disseminate the best loading practices to all main lines in the country.

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CSO: 1829/140

FLOATING DRY DOCK MOVED TO EAST CASPIAN, BEGINS WORK

Ashkhabad TURKMENSKAYA ISKRA in Russian Feb 82 p 2

[Article by G. Tsura: "A Test for the Dock"]

[Text] The double-tower floating dry dock received from the Astrakhan' 10-Let Oktyabrya Shipyard successfully underwent testing in the machine shops of the Krasnovodsk commercial seaport. A mixed river-sea ship weighing almost 1,500 tons was hoisted onto the dock for the first time on the eastern shore of the Caspian.

The experiment also made something else perfectly obvious: the new floating dock has a large margin of safety. It could "embrace" even larger ships, sea-going vessels weighing up to 2,000 tons.

A careful, thorough analysis of the capabilities of the floating dock is not unfounded; after all, its age runs to seven decades. During these years it has been rebuilt many times and has undergone long journeys.

The opinion of specialists is that the dock-septugenarian will live to be 100. What is more, in terms of operating characteristics it is hardly inferior to the latest model.

The Gazli rose slowly onto the dock, meter by meter. The tugboat Sokol, leaving a foaming trail behind it, cautiously pulled the enormous black bulk of the ship further and further. Now the Sokol, having passed the entire dock, came out on its right and the diesel ship, 114 meters long, was caught between the towers of the dock. The pumps went on, pumping water out of the pontoons. The hoisting of the ship began, and lasted almost an hour and 10 minutes.

But at least two months were spent preparing for this first, and very important hoist.

Chief engineer of the port Aziz Gadzhiyevch Gadzhiyev, Vasiliy Ivanovich Chvanov, well-known dock foreman from Astrakhan' and former "chief" of the dock, Ivan Terent'yevich Korol', and others who were to participate in this important event

in the life of the port were concerned about just one thing: whether the ship would settle precisely into the "bed" prepared for it in the dock and whether the dock would withstand the test. Again and again the drawings were pulled out, Gadzhiyev's inevitable measuring tape came out of his pocket, and new refinements would be made.

The dock truly "looked fine." Patches of light played on its fresh-painted riveted towers. Instead of the usual keel blocks, 45 unsecured concrete pedestals were arranged in almost chessboard order on the dock floor. This was the "bed" on which the bottom of the ship would lie. The pedestals, an idea of A. Gadzhiyev, weigh 2.5 tons apiece and are stable enough to hold the ship, but at the same time can easily be moved by a lift truck to adjust the "bed" for another type of ship. The system is highly flexible and saved a great deal of metal and timber.

What can you say? The Krasnovodsk port workers did many things to put the dock into operation ahead of schedule.

"The dock is in reliable hands," V. I. Chvanov observed with approval, watching the quick, accurate actions of the new crew.

Vasiliy Ivanovich Chvanov worked as a dock foreman on this dock for 25 years. There is no question that he knows its history well. He knows that it was built in 1911 in the shipyards of the St. Petersburg gunboat plant. During World War I it fell into the hands of the Germans, spent some time in Finland, and then was returned from Germany to Russia. That is why I was not surprised, for example, when I once made my way far up into one of the towers of the dock and found a Finnish heating lamp that had been forgotten there many years ago.

V. I. Chvanov studied his dock down to fine points. He knew that it would not let him down. Nonetheless he was anxious, for this was such a day, the first day of the dock's work on the Caspian. But everyone was anxious: the dock crew headed by senior motor mechanic I. Pichugin, deputy dock chief V. Drozdov, and S. Mukhamedzyanov, captain of the Baku-based diesel ship Gazli.

A strong, icy northeastern wind was blowing, and conditions for entering the dock were not optimal. Nonetheless, they decided to try.

"Open the gates!" V. Chvanov commanded.

The water rushed noisily into the pontoons. In 40 minutes the enormous pontoons of the dock would "drink" about 5,000 cubic meters of water and the dock would sink to the necessary depth, the depth at which the hull of the Gazli sat in the water.

The dock sank lower and lower. The sea playfully splashed inside its towers. Gulls flew down with hoarse cries, hoping to feed on fish trapped in the dock.

Finally the necessary depth was achieved and the dock stood down by the stern.

The Gazli approached, towed by the Sokol, supported from behind by another tugboat, the 100 Let Krasnovodsku.

It is extremely difficult to enter a dock in such a strong wind.

It took more than an hour to center the hull of the ship. A. Gadzhiyev made a chalk mark on one of the bollards of the dock, the berthing pedestals: "Here is the 146th frame of the dock!" It had to coincide with the bulkhead of the ship where the ship superstructures began. Finally the complex operation was completed.

"Begin raising it! Switch on the electric pumps!"

And now, as in a film run backwards, everything was repeated. The guard railings of the dock slowly appeared out of the water. Water rushed downward, exposing the sides of the ship. Its bilge lines showed. In just a little longer the bottom of the dock was visible. That was all: the ship had been raised.

Although there were still many puddles on the dock, A. Gadzhiyev, deputy chief of the ship service of the Caspian Steamship Company O. Girchenko, and other participants in the experiment rushed in. They were all impatient to know how the ship was lying on its "bed."

Everything was fine. The Gazli was settled firmly on the 45 pedestals. It is a little strange and unusual to see the bottom of a ship, covered by shells.

Gages in the compartments of the dock determined the remaining water. From the captain A. Gadzhiyev learned how much ballast water and fuel remained. Simple calculations showed that the dock could raise another 350-400 tons.

The dock passed its test. The people passed theirs too. Mechanics A. Rukavsov, and V. Bereznov, bosun B. Toloknev, and the crew of the Gazli worked quickly and accurately despite the icy wind.

A difficult day was over. But the people who had won a very important labor victory did not disperse for a long time. The eastern Caspian now has a drydock which can repair large ships.

It was quiet at the dock again, until the next day. Only a gray seal swam boldly up to the dock and looked curiously at the enormous ship suspended above the water. Such a sight, unfamiliar in the past, can now be seen here.

11,176
CSO: 1829/140

OFFICIAL EXPLAINS WHY GRADUATES ARE NOT ASSIGNED TO THEIR SPECIALIZATIONS

Moscow VODNYY TRANSPORT in Russian 28 Nov 81 p 2

[Comment on reader letters, by Vladimir Mikhaylovich Nekhoroshev, deputy chief of the Personnel Administration of the Ministry of the Maritime Fleet: "In the Primary Specialization"]

[Text] "I graduated in 1980 from the division of operation of ship automated systems at the Rostov-na-Donu Nautical School imeni G. Ya. Sedov. I and 27 of my comrades were assigned after school to the Azov Maritime Steamship Company. We have been here more than two years now, but not one of us is working in our specialization."

The letter which the editors receive from A. Rudskiy of Zhdanov goes on to say that the school graduates are mostly working on ships of old design and only rarely encounter questions relating to their specialization. The steamship company told the young people that in order to get a position as an engineer's assistant, which is what their four years in school prepared them to do, they must spend 18 months working six months each in the specializations of mechanic, seaman, and electrician. Because of this, A. Rudskiy tells the editors, four of his comrades are already preparing to leave the steamship company and many have decided to become requalified and have entered schools to receive other specializations.

The problem raised in the letter from Zhdanov, judging from the editorial mail , concerns many graduates of schools who studied in the departments of operation of ship automated systems. Similar letters arrive from different shipping basins. The editorial board asked Vladimir Mikhaylovich Nekhoroshev, deputy chief of the Personnel Administration of the Ministry of the Maritime Fleet to comment on them.

In the middle of the 1970's the Soviet merchant fleet began to receive new ships in classes A-1 and A-2. They had large power plants which were controlled by modern automated systems. Seamen need special training to operate these systems.

For this reason, in October 1973 the Miniatry of the Maritime Fleet decided to organize new divisions in the schools of the sector to train specialists in ship automated systems with the qualification rating of ship technician. The first cadets were admitted to these divisions in 1974.

The positions of assistant engineer 1st and 2nd classes were envisioned in the ship staff schedules to use the graduates of the new specialization. These positions consolidate, it can be said, three jobs: seaman, mechanic, and electrician. The new divisions of ship automated systems train precisely such specialists. The introduction of these combined occupations will lead to a gradual replacement of such positions as mechanic, seaman, electrician, and others by ship technicians.

Of course, the transition to the new form of organization of labor increases the responsibility of ship specialists and demands that they have considerable knowledge and working experience in all three specializations.

It is difficult to make an immediate switch to a new staff schedule. It is necessary to form crews in which the assistant engineers can perform the duties of seamen, mechanics, and electricians equally well. Therefore, the adjustment is being done gradually, with replacement of existing positions by ship technicians in stages. This is what makes it necessary for graduates of schools to work for a time in all three of the specializations, get used to the characteristics of each particular ship, and accumulate the necessary experience.

Unfortunately, we still do not have many ships on which the crews work using the new method. The schools have graduated only about 500 specialists in automated systems, whereas the fleet needs several tens of thousands.

There are also organizational shortcomings in the steamship companies and cases occur where ship technicians are not used according to their designation. In 1981 the ministry issued appropriate orders to straighten out this work.

The Azov Maritime Steamship Company plans to complete the transition of ship crews to the new staff schedule by January 1982. School graduates who were assigned to Zhdanov will be able to begin work in their primary specialization immediately.

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CSO: 1829/140

FAR EASTERN PORT OF VANINO SUCCEEDS THROUGH TECHNICAL INNOVATIONS

Moscow SOTSIALISTICHESKAY INDUSTRIYA in Russian 2 Dec 81 p 2

[Article by V. Rostovtsev, chief technologist, port of Vanino: "The Peak in a Far Eastern Port"]

[Text] The port of Vanino is developing intensively. But the needs of the northern territories which it serves are growing even faster. One is especially struck by this at a time like this fall, when the "peak" hits. The port is overloaded, jammed with containers, stacks of timber, and other cargo. Thousands of railroad cars wait to be processed. Breakdowns on the marine ferry crossing from Vanino to Kholmsk and on the railroad, related to the onslaught of typhoons and cyclones against Sakhalin and the continent, were showing their effect. The weather further complicated the already intense life of the Far Eastern port, one of the largest in the country.

In the swirl of urgent affairs the workers of the port of Vanino rely on the three "whales": personnel, organization, and technology. We have more than 200 people who have worked for us more than 20 years. Respected worker dynasties have formed. We keep track of their know-how and propagandize it. We work a great deal on improving labor organizations, and we have some interesting innovations on this score. But today I want to call attention to technology.

This desire did not arise because I wanted to share know-how, but rather for another reason. It seems to me that in recent years a great deal of attention has been devoted to improving the organization of jobs and their management, but technological support has been put on the "back burner." In any case, this is obviously true at those ports and enterprises that I have visited.

The explanation for this phenomenon is superficial: the apparent simplicity of modifying organizational structure wins them over. It appears that an impact can be achieved without special expenditures. People think, for example, that it is sufficient to assemble the workers into a large brigade, institute a single job order, and things will go just fine without new machines and attachments.

But by no means are these hopes always borne out. For only the introduction of progressive technological concepts backed up by appropriate organization can

produce a tangible growth in labor productivity and a rise in the return on capital. We know this from our own experience. For example, the introduction of seagoing railroad ferries as new, more sophisticated equipment on the Vanino — Kholmsk line made it possible to raise labor productivity in the crossing many times. It also freed a large number of ships.

I must emphasize that the port management did assess the importance of a radical technological reorganization at the right time. As long ago as 1974 a special division and technological groups in the cargo regions were formed. A small experimental facility was set up, and grew to a shop for cargo-grappling attachments. A creative collective of the port technological service is taking shape. All these things help reduce the time required to introduce innovations.

We began by reviewing the technological schemes of all cargo-handling processes. We put together new sets of cards with instructions and reference materials. First we dealt with the bulk cargo such as round timber. We introduced shackle-toggles and other attachments to hoisting cranes, changed the specialization of the docks and storage areas, and so on. Labor productivity in these jobs rose 25 percent. At the same time the method of laying timber across the decks of seagoing vessels with a new securing technique was being worked out. This reduced expenditures of labor, time, and electricity to install posts before each loading operation and speed up unloading at the destination port.

Another example is steel pipe for the gas workers of Western Siberia. It was impossible to get close to it because of the large diameter. After introducing automatic grappling cranes and semiautomatic self-uncoupling devices manufactured in our experimental shop, we were able to raise labor productivity for unloading ships two times and for loading flatcars by five times.

In recent years the port has introduced many different gripping devices for wheeled and caterpillar equipment, containers, rolled steel, and stacks of sawtimber. We recently began improving our technology for loading universal containers of the Ministry of Railroads with load capacities of 2.5-5 tons. The reason was that careful economic analysis revealed that the traditional technology was unprofitable. But we now figure that the program of proposed steps will make it possible to raise labor productivity by 50 percent and conserve 30 percent of the fuel and electricity, which will ultimately make container processing profitable.

The examples given do not provide a full idea of the work of technologists in the port of Vanino. They are simply evidence of the need for and importance of their work. Underestimating the importance of this aspect of the work leads to a situation where the same pipe is secured in gondola cars and flatcars by different systems in different ports. Too much wire and too many wooden beams and nails are used to secure it. This is not accidental. The technological services in many ports are very weak and do not have their own facilities. They cannot enter into agreements! Particularly not in those cases where they must go outside the framework of their own department.

After working for several years to introduce through stack shipping of grain of forage cargo in sacks, we became convinced that this kind of packaging is

completely unsuitable. The sacks tear. Half of them have to be reshaped during unloading. Dock workers walk ankle-deep in flour and mixed feed. Expenditures for packaging do not go down, they go up.

In our port we have worked out a design for a general-purpose reusable packaging unit which fits well in railroad cars, large containers, and the beds of trucks. It is both a container and a means of stacking. According to our calculations, introduction of this innovation will free more than half of the loading workers working with bulk materials. Unfortunately, USSR Gossnab, to which we sent the necessary materials, is moving slowly on deciding this matter.

The lack of uniform technological concepts sometimes has absurd results. For example, stack shipping had not yet managed to develop sufficiently when the Ministry of Railroads introduced PS-05M strops by directive. The railroad charges the port 25 kopecks for each cycle of the strop. And if you keep it, you must pay a fee (notice that it is not a penalty, which would go to the state budget) of two rubles a day. So we are paying for the strops which we ourselves developed.

But the indignation we feel is not the point. The procedure does not work. The organization of stack shipping must not be constructed on the basis of particular agreements among departments. It should be founded on a solid statute which envisions, specifically, the procedures for circulation of, for example, those very same strops and reasonable amounts of payment from the pockets of all the participants in shipping, the USSR Ministry of Timber, Pulp and Paper, and Wood Processing Industry, the Ministry of the Maritime Fleet, the Ministry of Foreign Trade, and certainly the Ministry of Railroads.

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BRIEFS

FERRY ARRIVED IN MAGADAN--The Sakhalin-6 marine railway ferry arrived in Magadan today. It has delivered a transformer for Kolyma Ges. The trip took place in difficult ice conditions. The icebreaker Kapitan Khlebnikov had to come to the ferry's assistance (?130) miles from Magadan. [LD060238 Moscow Domestic Service in Russian 0800 GMT 4 Feb 82 LD]

PORT FACILITIES MODERNIZED--Restrictions on the handling of large-tonnage ships have now been lifted following the placing into service of a new deep-water mooring complex at Leningrad's seaport. They now moor at the waterfronts of the new complex open for exploitation round the seasons. The construction of the new water fronts is due to the increasing carriage handled by Leningrad port, which annually, on the average, goes up by half a million tons, Oleg Terekhov, the chief of the port, told a TASS correspondent. Port facilities are being modernized to intensify carriage. The second section of the container terminal, the biggest of its kind in the north-west of the USSR, has been placed into service. It is handling the bulk of freight from West European ports across Siberia to South-East Asia and back. [Moscow TASS in English 1010 GMT 4 Feb 82 LD]

ICE RECONNAISSANCE PLANES--Ice reconnaissance planes have begun work above the Tatar Gulf because severe frosts have made approach to the northern moorings of Vanino port difficult. Hydrologists are researching the icefields from the air to learn of possible routes ships can take. Their advice has already been used by the first convoy--the Sakhalinless, Ayan and Baykonor--to enter Vanino. [Moscow Domestic Service in Russian 0001 GMT 5 Feb 82 LD]

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March 25, 1982